

## CLAIMS:

1. An N-port signal divider/combiner for dividing and/or combining signals in N-1 frequency bands, including a common line; and N-1 signal ports each coupled to the common line by a respective transmission line, each transmission line having one or more stubs extending from the transmission line, each stub having a length selected so that the stub acts as a notch filter at a respective rejection wavelength, wherein at least one of the stubs is a short-circuit stub, and at least one of the stubs is an open-circuit stub.
2. A signal divider/combiner according to claim 1 wherein the distance between the common line and each stub is approximately  $\lambda/4$ , where  $\lambda$  is the rejection wavelength of the stub.
3. A signal divider/combiner according to claim 1 wherein the common line and transmission lines are formed in a microstrip configuration.
4. A signal divider/combiner according to claim 1 wherein the signal divider/combiner is a diplexer in which  $N=3$ .
5. A signal divider/combiner according to claim 1 wherein one of the rejection wavelengths is a Global Positioning System L1 frequency, and one of the rejection wavelengths is a Global Positioning System L2 frequency.
6. A multiband antenna including N-1 antennas each dimensioned to transmit and/or receive radiation in a respective frequency band, and an N-port signal divider/combiner according to claim 1, wherein each antenna is coupled to a respective transmission line of the N-port signal divider/combiner.
7. An amplifier including one or more N-port signal divider/combiners according to claim 1.
8. An N-port signal divider/combiner for dividing and/or combining signals in N-1 frequency bands, including a common line; and N-1 signal ports each coupled to the common line by a respective transmission line, each transmission line having one or more stubs extending from the transmission line, wherein a first one of the stubs has a length  $n\lambda_1/4$  selected so that the stub acts as a notch filter with a reject band including a first wavelength  $\lambda_1$ , a second one of the stubs has a length  $m\lambda_2/4$  selected so that the stub acts as a notch filter with a reject band including a second wavelength  $\lambda_2$ , and wherein n and m are different integers.

9. A signal divider/combiner according to claim 8 wherein the first one of the stubs is an open-circuit stub, the second one of the stubs is a closed-circuit stub,  $n$  is an odd integer, and  $m$  is an even integer.
- 5 10. A signal divider/combiner according to claim 8 wherein the first one of the stubs is an open-circuit stub with a length  $3\lambda_1/4$ , and the second one of the stubs is a closed-circuit stub with a length  $\lambda_2$ .
11. A signal divider/combiner according to claim 8 wherein the distance between the common line and each stub is approximately  $\lambda_i/4$ , where  $\lambda_i$  is the wavelength in the reject band of the notch filter formed by the stub.
- 10 12. A signal divider/combiner according to claim 8 wherein the common line and transmission lines are formed in a microstrip configuration.
13. A signal divider/combiner according to claim 8 wherein the signal divider/combiner is a diplexer in which  $N=3$ .
- 15 14. A signal divider/combiner according to claim 8 wherein one of the rejection wavelengths is a Global Positioning System L1 frequency, and one of the rejection wavelengths is a Global Positioning System L2 frequency.
- 20 15. A multiband antenna including a first antenna dimensioned to transmit and/or receive radiation at a first wavelength  $\lambda_1$ , a second antenna dimensioned to transmit and/or receive radiation at a second wavelength  $\lambda_2$ , and a signal divider/combiner including a common line; first and second transmission lines coupling the first and second antennas respectively to the common line; a first stub extending from the first transmission line and having a length  $n\lambda_2/4$  selected so that the stub acts as a notch filter with a reject band including the second wavelength  $\lambda_2$ ; and a second stub extending from the second transmission line and having a length  $n\lambda_1/4$  selected so that the stub acts as a notch filter with a reject band including the first wavelength  $\lambda_1$ , wherein  $n$  and  $m$  are different integers.
- 25 16. An amplifier including one or more  $N$ -port signal divider/combiners according to claim 8.
- 30 17. A method of operating an  $N$ -port signal divider/combiner according to claim 8, the method including rejecting signals at the first wavelength  $\lambda_1$  with the first stub; and rejecting signals at the second wavelength  $\lambda_2$  with the second stub.